

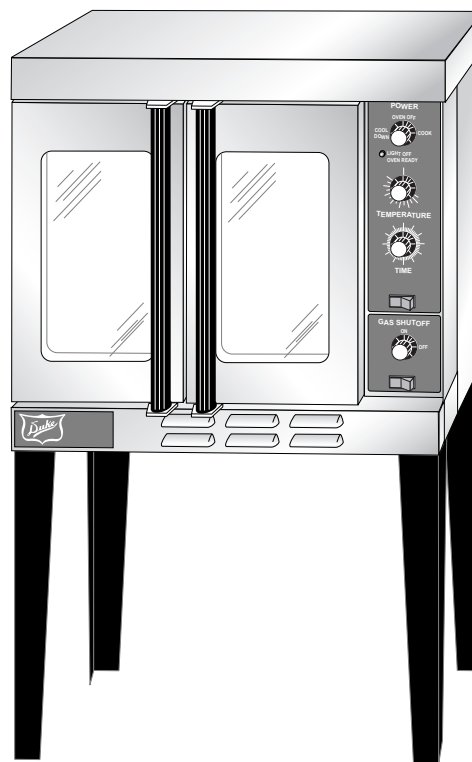


"Your Solutions Partner"

GAS CONVECTION OVEN

MODELS

6/13 THE OVEN
E SERIES



**Please read this manual completely before attempting to
install, operate or service this equipment.**

This document is prepared for trained Duke service technicians. It is not to be used by anyone not properly qualified to perform these procedures.

This Service Manual is not all encompassing. If you have not been trained on servicing this product, be sure to read the manual completely before attempting servicing. Be sure all necessary tools, test equipment, and skills are available. Those procedures for which you do not have the proper skills and test equipment must be performed only by a qualified Duke trained service technician.

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IMPORTANT WARNING AND SAFETY INFORMATION

WARNING

READ THIS MANUAL THOROUGHLY BEFORE OPERATING, INSTALLING, OR PERFORMING MAINTENANCE ON THE EQUIPMENT.

WARNING

FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

WARNING

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

WARNING

DO NOT OPERATE THIS EQUIPMENT WITHOUT PROPERLY PLACING AND SECURING ALL COVER AND ACCESS PANELS.

CAUTION

Observe the following:

- Provide and maintain adequate minimum clearances from all walls and combustible materials.
- Provide and maintain adequate clearance for air openings.
- Keep the equipment area free and clear of combustible material.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Retain this manual for future reference.

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GENERAL

INTRODUCTION

Illustrations used in the manual may show any model unless the information is specific to a particular model. All procedures are applicable to all models unless specifically indicated.

INSTALLATION

For detailed installation instructions, refer to the Installation and Operation Manual.

OPERATION

For specific operating instructions, refer to the Installation and Operation Manual.

CLEANING

For specific cleaning instructions, refer to the Installation and Operation Manual.

TOOLS

Standard

- Standard set of hand tools
- VOM with A.C. current tester (Any quality VOM with a sensitivity of at least 20,000 ohms per volt can be used)
- Pyrometer
- Manometer

SPECIFICATIONS

6/13 GAS CONVECTION OVEN AND “E” GAS CONVECTION OVEN

HEATING VALUE	NATURAL GAS		PROPANE GAS	
	1000 BTU	37.3 MJ/m ³	2550 BTU	95.0 MJ/m ³
SPECIFIC GRAVITY	0.63	0.63	1.53	1.53
GAS PRESSURE AT MANIFOLD	3.5" W.C.	0.87 kPa	10" W.C.	2.49 kPa
OVEN INPUT STANDARD DEPTH				
PER BURNER	20,000 BTU/HR	5.9 kW/HR	20,000 BTU/HR	5.9 kW/HR
PER OVEN	40,000 BTU/HR	11.8 kW/HR	40,000 BTU/HR	11.8 kW/HR
OVEN INPUT DEEP DEPTH				
PER BURNER	23,000 BTU/HR	6.8 kW/HR	23,000 BTU/HR	6.8 kW/HR
PER OVEN	46,000 BTU/HR	13.5 kW/HR	46,000 BTU/HR	13.5 kW/HR
BURNER ORIFICE SIZE				
STANDARD DEPTH	#44	2.18 mm	#55	1.32 mm
DEEP DEPTH	#43	2.26 mm	#54	1.40 mm

COMPONENT REMOVAL AND REPLACEMENT

ELECTRICAL LOCKOUT/TAGOUT PROCEDURE



WARNING

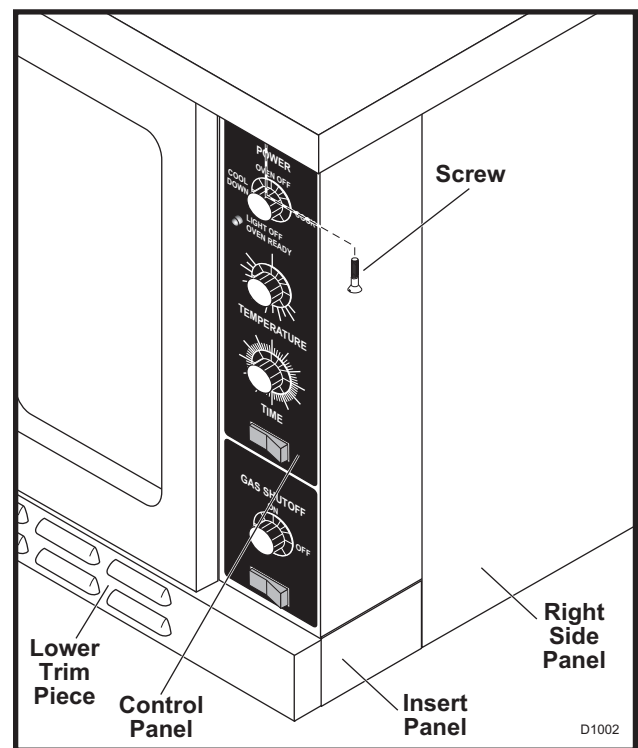
BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

The Electrical LOCKOUT/TAGOUT Procedure is used to protect personnel working on an electrical appliance. Before performing any maintenance or service that requires exposure to electrical components, follow these steps:

1. In electrical box, place appliance circuit breaker into OFF position.
2. Place a lock or other device on electrical box cover to prevent someone from placing circuit breaker ON.
3. Place a tag on electrical box cover to indicate that appliance has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.
4. Disconnect appliance power cord from electrical outlet.
5. Place a tag on the cord to indicate that unit has been disconnected for service and power should not be restored until tag is removed by maintenance personnel.

RIGHT SIDE PANEL

1. Remove screw at the top of the Control Panel.
2. Loosen set screw and remove GAS SHUTOFF Knob.
3. Slide the control panel forward being careful not to damage wiring or thermocouple or RTD tubes.
4. Loosen the four screws that hold the Lower Trim Piece in place.
5. Slide the Lower Trim Piece forward, and remove it.
6. Before the large side panel can be removed the stainless steel insert panel behind the control compartment must first be removed.



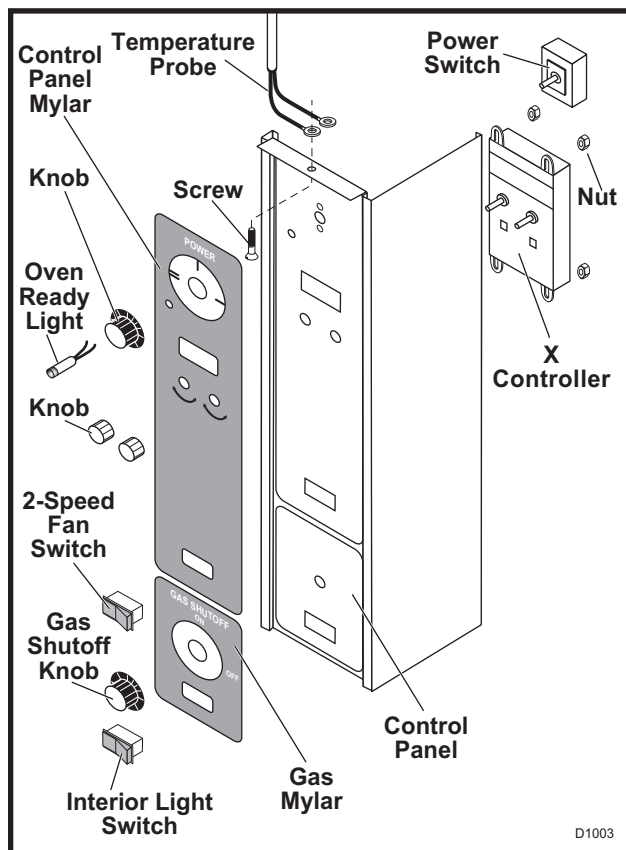
7. Remove the two screws that hold the small stainless steel insert panel in place.
8. Slide the panel forward and out of the unit.
9. To remove the large side panel remove the six screws on the front and rear flanges of the panel.
10. Pull panel free from the bottom and remove it.

6/13 X CONTROLLER ASSEMBLY**WARNING**

**DISCONNECT OVEN FROM POWER
SOURCE BEFORE PERFORMING
ANY SERVICE.**

Component Access

1. Loosen set screw and remove GAS SHUTOFF knob.
2. Remove screw at top center of X Controller assembly and swing Control Panel down to allow access to Control Panel components.



4. Remove nut securing POWER switch and remove POWER switch.
5. Reverse procedure to install new POWER switch.

X Controller

1. Perform Component Access procedure.
2. Disconnect and tag wires from X Controller.
3. Remove two knobs from front of Control Panel.
4. Remove four nuts securing X Controller to Control panel.
5. Remove X Controller from rear of Control Panel.
6. Reverse procedure to install a new X Controller.

OVEN READY Light

1. Perform Component Access procedure.
2. Disconnect wires to OVEN READY light.
3. Remove OVEN READY light from front of Control Panel.
4. Reverse procedure to install a new OVEN READY light.

2-Speed Fan Switch

1. Perform Component Access procedure.
2. Disconnect wires from Fan Switch.
3. Remove Fan Switch from front of Control Panel.
4. Reverse procedure to install a new Fan Switch.

Interior Lights Switch

1. Perform Component Access procedure.
2. Disconnect wires from Lights Switch.
3. Remove Lights Switch from front of Control Panel.
4. Reverse procedure to install a new Lights Switch.

POWER Switch

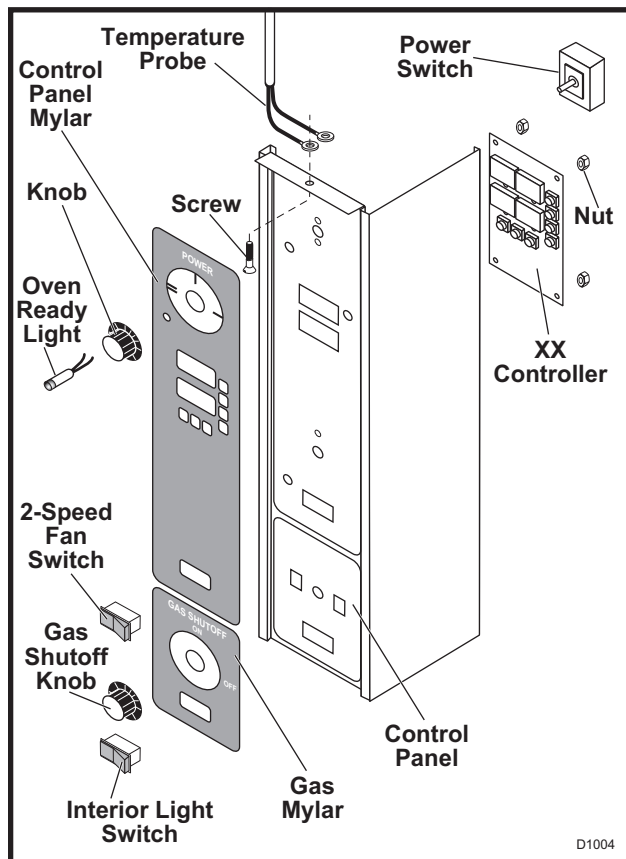
1. Perform Component Access procedure.
2. Loosen set screw and remove knob from oven POWER Switch.
3. Disconnect and tag wires from POWER Switch.

6/13 XX GAS CONTROL ASSEMBLY**WARNING**

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

Component Access

1. Loosen set screw on GAS SHUTOFF knob.
2. Remove screw at top center of XX Gas Control Assembly and swing Control Panel down to allow access to Control Panel components.

**POWER Switch**

1. Perform Component Access procedure.
2. Loosen set screw and remove knob from POWER Switch.

3. Disconnect wires from POWER Switch.
4. Remove nut securing POWER Switch and remove POWER Switch from rear of Control Panel.
5. Reverse procedure to install new POWER Switch.

XX Controller

1. Perform Component Access Procedure
2. Disconnect wires from XX Controller.
3. Remove two knobs from front of Control Panel.
4. Remove four nuts securing XX Controller to Control Panel.
5. Remove XX Controller from rear of Control Panel.
6. Reverse procedure to install new XX Controller.

OVEN READY Light

1. Perform Component Access procedure.
2. Disconnect wires to OVEN READY light.
3. Remove OVEN READY light from front of Control Panel.
4. Reverse procedure to install a new OVEN READY light.

2-Speed Fan Switch

1. Perform Component Access procedure.
2. Disconnect wires from Fan Switch.
3. Remove Fan Switch from front of Control Panel.
4. Reverse procedure to install new Fan Switch.

Interior Lights Switch

1. Perform Component Access procedure.
2. Disconnect wires from Lights Switch.
3. Remove Lights Switch from front of Control Panel.
4. Reverse procedure to install a new Lights Switch.

6/13 Z CONTROLLER ASSEMBLY

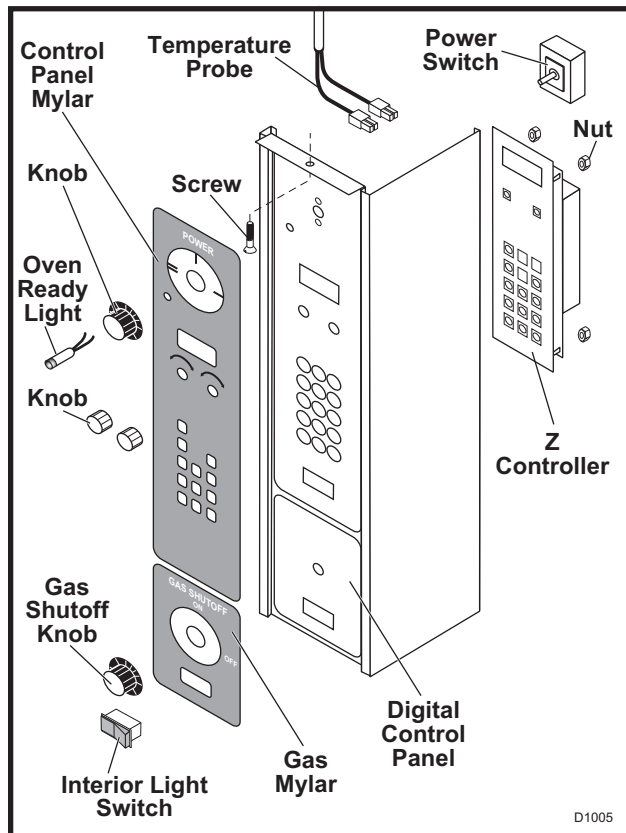


WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

Component Access

1. Loosen set screw on GAS SHUTOFF knob.
2. Remove screw at top center of X Controller Assembly and slide Control Panel forward to allow access to Control Panel components.



POWER Switch

1. Perform Component Access procedure.
2. Loosen set screw and remove knob from POWER Switch.
3. Disconnect wires from POWER Switch.
4. Remove nut securing POWER Switch.
5. Reverse procedure to install new POWER Switch.

Z Controller

1. Perform Component Access procedure.
2. Disconnect wires from Z Controller.
3. Remove two knobs from front of Control Panel.
4. Remove four nuts securing Z Controller to Control Panel.
5. Remove Z Controller from rear of Control Panel.
6. Reverse procedure to install new Z Controller.

OVEN READY Light

1. Perform Component Access procedure.
2. Disconnect wires to OVEN READY light.
3. Remove OVEN READY light from front of Control Panel.
4. Reverse procedure to install a new OVEN READY light.

Interior Lights Switch

1. Perform Component Access procedure.
2. Disconnect wires from Lights Switch.
3. Remove Lights Switch from front of Control Panel.
4. Reverse procedure to install a new Lights Switch.

6/13 ZX GAS CONTROLLER ASSEMBLY

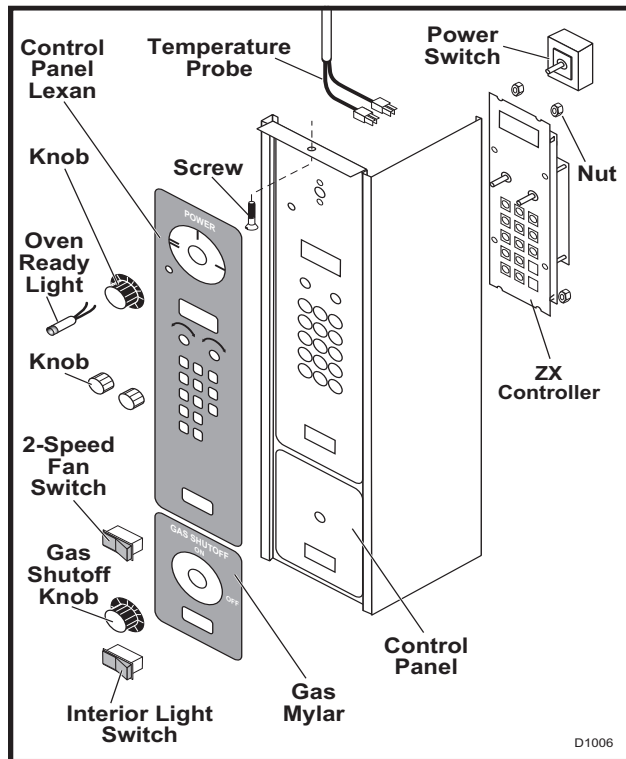


WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

Component Access

1. Loosen set screw on GAS SHUTOFF knob.
2. Remove screw at top center of ZX Controller Assembly and swing Control Panel down to allow access to Control Panel components.



POWER Switch

1. Perform Component Access procedure.
2. Loosen set screw and remove knob from POWER Switch.
3. Disconnect wires from POWER Switch.
4. Remove nut securing POWER Switch and remove POWER Switch.
5. Reverse procedure to install new POWER switch.

ZX Controller

1. Perform Component Access procedure.
2. Disconnect wires from ZX Controller.
3. Remove two knobs from front of Control Panel.
4. Remove four nuts securing ZX Controller to back of Digital Control Panel.
5. Remove ZX Controller from rear of Digital Control Panel.
6. Reverse procedure to install new ZX Controller.

OVEN READY Light

1. Perform Component Access procedure.

2. Disconnect wires to OVEN READY light.
3. Remove OVEN READY light from front of Control Panel.
4. Reverse procedure to install a new OVEN READY light.

Interior Lights Switch

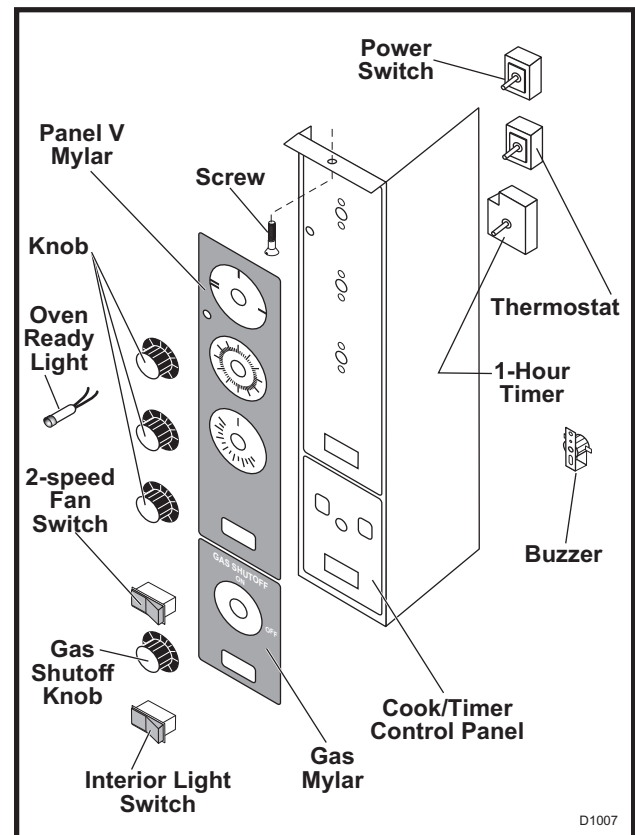
1. Perform Component Access procedure.
2. Disconnect wires from Lights Switch.
3. Remove Lights Switch from front of Control Panel.
4. Reverse procedure to install a new Lights Switch.

E SERIES AND 6/13 V CONTROLLER ASSEMBLY



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.



D1007

Component Access procedure

1. Loosen set screw on GAS SHUTOFF knob.
2. Remove screw at top center of X Controller Assembly and swing Control Panel down to allow access to Control Panel components.

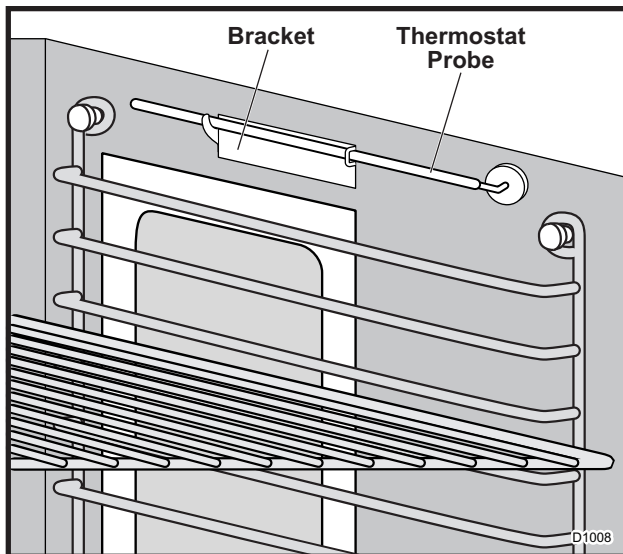
POWER Switch

1. Perform Component Access procedure.
2. Loosen set screw and remove knob from POWER Switch.
3. Disconnect wires from POWER Switch.
4. Remove nut securing POWER Switch and remove POWER Switch.
5. Reverse procedure to install new POWER Switch.

Thermostat

The Thermostat is located on the V Controller and the Thermostat Probe is located in the upper right of oven. The Thermostat Probe provides temperature information back to the Thermostat. The capillary tube from the Thermostat to the Thermostat Probe is covered with a fiberglass sleeve.

NOTE: When removing the Thermostat be careful not to bend the capillary tube at a sharp angle to prevent kinking.



1. Perform Component Access procedure.

2. Open oven door and carefully remove Thermostat Probe from bracket at upper right side of the oven.
3. Pull Thermostat Probe through the oven sidewall.
4. Remove Thermostat knob from front of V Controller assembly.
5. Disconnect wires from back of Thermostat.
6. Remove nut securing the Thermostat to front of V Controller assembly.
7. Pull Thermostat off rear of V Controller assembly.
8. Reverse procedure to install a new Thermostat. Be sure fiberglass insulation is on capillary tube to Thermostat Probe.

1-Hour Timer

1. Perform Component Access procedure.
2. Loosen set screw and remove 1-Hour Timer knob.
3. Remove nut securing 1-Hour Timer and remove 1-Hour Timer.
4. Reverse procedure to install new 1-Hour Timer.

OVEN READY Light

1. Perform Component Access procedure.
2. Disconnect wires to OVEN READY light.
3. Remove OVEN READY light from front of Control Panel.
4. Reverse procedure to install a new OVEN READY light.

Fan Switch

1. Perform Component Access procedure.
2. Disconnect wires from Fan Switch.
3. Remove Fan Switch from front of panel.
4. Reverse procedure to install a new Fan Switch.

Interior Lights Switch

1. Perform Component Access procedure.
2. Disconnect wires from Lights Switch.
3. Remove Lights Switch from front of Control Panel.
4. Reverse procedure to install a new Lights Switch.

Buzzer

1. Perform Component Access procedure.
2. Disconnect wires from Buzzer.
3. Remove screw securing Buzzer to back of Control Panel and remove Buzzer.
4. Reverse procedure to install a new Buzzer.

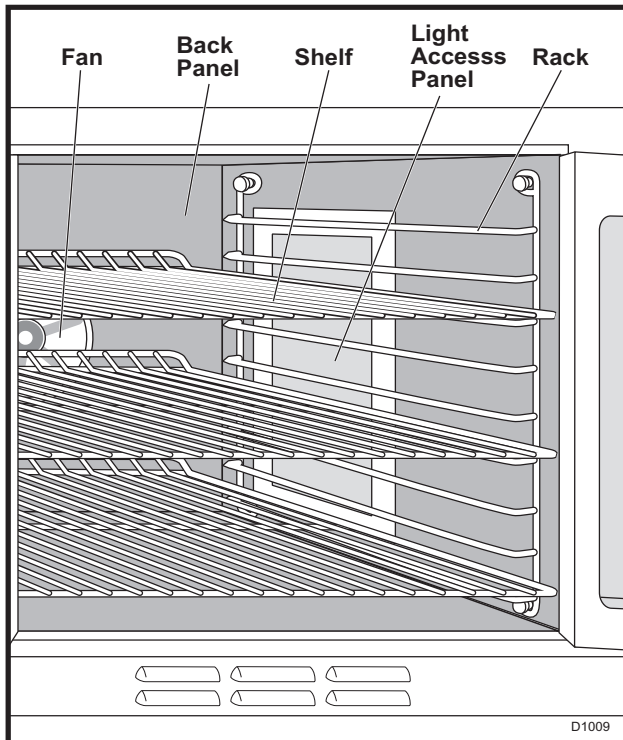
MOTOR



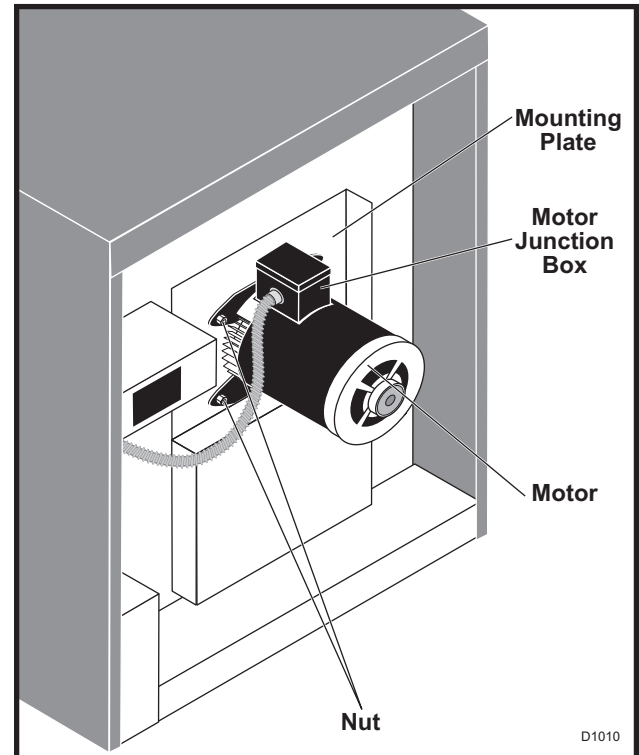
WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Open oven doors.
2. Remove shelves.
3. Remove two side racks.
4. Remove four screws attaching Back Plate and remove Back Plate to access Blower (Fan).
5. Loosen set screws on blower wheel and remove from motor shaft.



5. At rear of oven, label and disconnect motor wires at Motor Junction Box.
6. Remove four nuts securing Motor to Mounting Plate and remove Motor.



7. Reverse procedure to install Motor.

OVEN LIGHTS

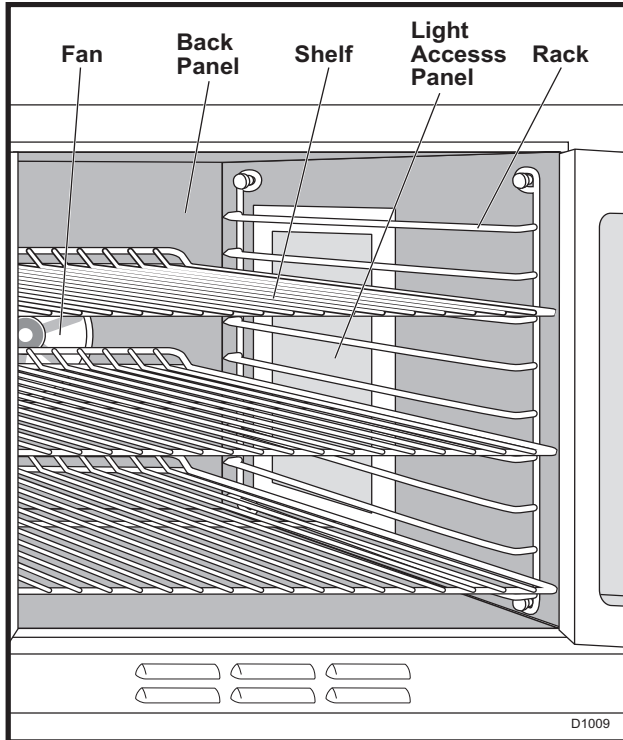
Oven lights are located on the right side of the oven. The light bulbs are replaced from inside the oven. The light sockets are replaced by removing the Right Side Panel.



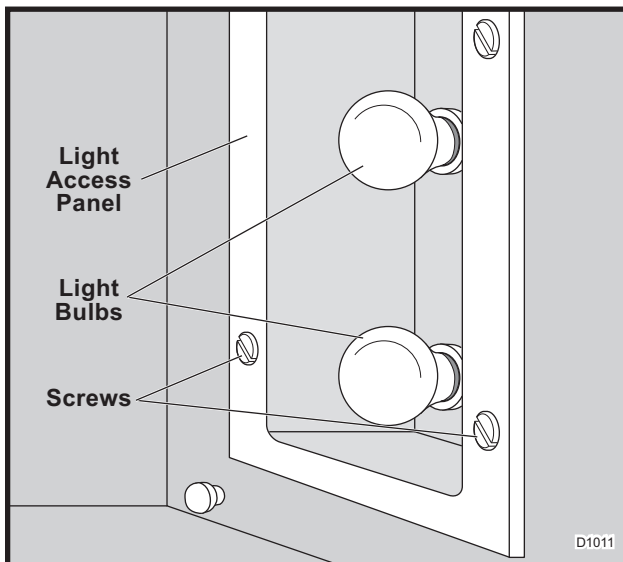
WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Open oven door.
2. Remove shelves and right side rack to access light bulbs.



3. Remove four screws securing Light Access Panel over light bulbs and remove the Light Access Panel.
4. Remove the faulty light bulb.
5. Reverse procedure to install a new light bulb.



OVEN DOORS

The Oven Doors on all ovens are constructed similarly. Only the 6/13 oven has a Turnbuckle Assembly that causes both the left and the right doors to open together.

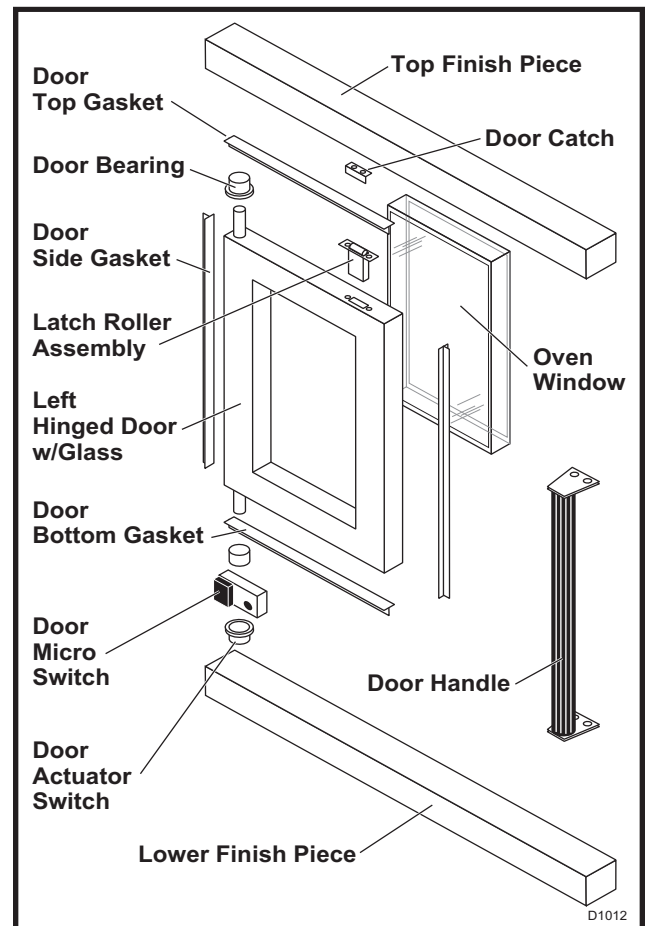


WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

Removal

1. Open Oven Door(s).
2. Remove Top Finish Piece.
3. Loosen set screw on top hinge rod nut plate.
4. Lift door off the door bearings.
5. Reverse procedure to install Oven Door.



Disassembly

The Oven Door can be disassembled as necessary to replace the Handle, Door Glass, Bearings, Roller Latch, and Door Catch. On the 6/13 dual door ovens a Turnbuckle Assembly can also be replaced.

Gasket Replacement

The Gaskets are not attached to the door. These Gaskets are attached to the oven frame. The four Gaskets can be individually replaced.

1. Open Oven Door.

NOTE: There are four separate Gaskets for the top, bottom, and two sides. Each Gasket is replaced independently.

2. Remove the screws securing the Gasket that is to be replaced.
3. Install new Gasket onto oven frame and secure in place with screws.
4. Close Oven Door and check that Gasket is properly sealing the door.

Roller Latch

1. Open Oven Door.
2. Remove door handle screws securing Roller Latch to top and bottom of Oven Door, then remove Door Handle.
3. Lift Roller Latch out of Oven Door.
4. Reverse procedure to install Roller Latch.

Door Switch



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Remove the Lower Finish Piece to access Door Switch.
2. Label and disconnect wires from Door Switch.

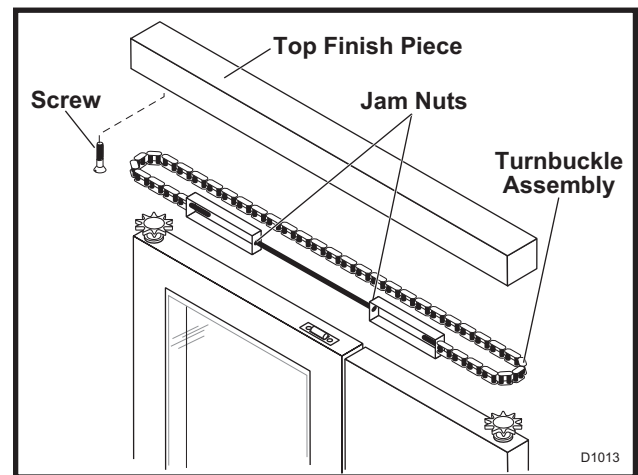
3. Remove screws securing Door Switch to the switch bracket and remove Door Switch.
4. Reverse procedure to install new Door Switch.
5. Close Oven Door.
6. Adjust Switch-Operating Cam as described in the SERVICE PROCEDURES section.

Door Handle

1. Open Oven Door.
2. Remove two screws at top and two screws at bottom, securing Handle to Oven Door.
3. Remove Handle from Oven Door.
4. Reverse procedure to install Handle.

Turnbuckle Assembly (used on two-door 6/13 series ovens only)

1. Remove screws securing Top Finish Piece to oven and remove Top Finish Piece.
2. Loosen Turnbuckles sufficiently to disengage Chain Drive from door Sprockets.



3. Remove Turnbuckle Assembly.

NOTE: When installing a new Turnbuckle Assembly, be sure to center Turnbuckles so that door can fully open and close.

4. Wrap new Turnbuckle Assembly around the Sprockets on the top of each door hinge.
5. Adjust turnbuckles as described in the SERVICE PROCEDURES section.

GAS SHUTOFF VALVE

The Gas Shutoff Valve is located on top of the Gas Valve inside the control compartment.



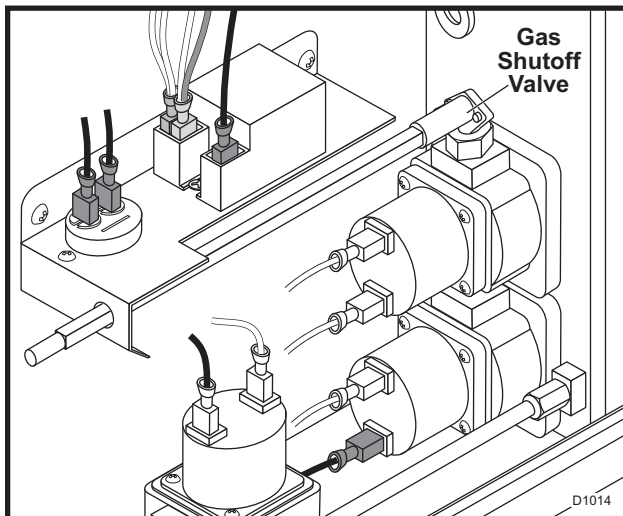
WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.



WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.



Removal

1. Turn Gas Valve on front control panel to the OFF position.
2. Perform Component Access procedure.
3. Verify that incoming gas line has been turned off.
4. Disconnect incoming gas line from back of Gas Shutoff Valve.
5. Remove shaft from front of Gas Shutoff Valve.
6. Unscrew Gas Shutoff Valve from top of Gas Valve and remove Gas Shutoff Valve.
7. Reverse procedure to install Gas Shutoff Valve.

NOTE: Use Anti-Seize Technologies TFE1400 all pipe threads when installing or replacing a Gas Shutoff Valve.

CAUTION: When reconnecting any gas connection use pipe joint compound.



WARNING

ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

8. Connect oven to power source.
9. Turn main gas line on.
10. Turn oven on and check for proper operation.

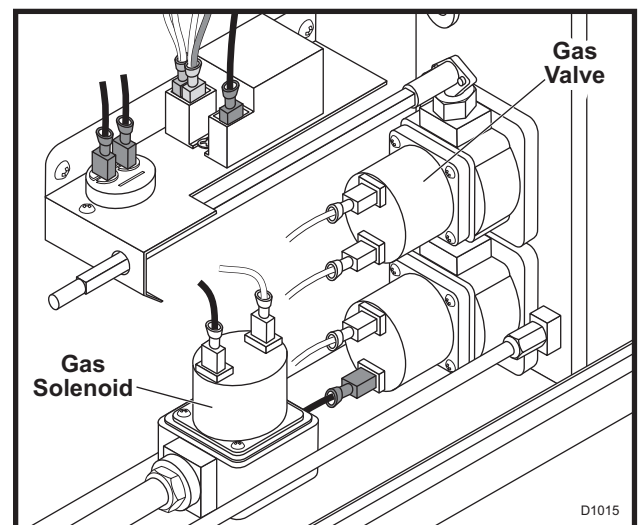
GAS SOLENOID

The gas solenoid is located behind the control panel and attached to the Control Compartment bottom.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.



1. Perform Component Access procedure.

2. Disconnect wires from Gas Solenoid.
3. Gas Solenoids will require the entire gas manifold being removed, as necessary to replace either the single or dual solenoids.
4. Reverse procedure to install new Gas Solenoid.

GAS VALVE

The Gas Valve is located behind the Control Panel and attached to the compartment bottom.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.



WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Turn Gas Valve on front Control Panel to the OFF position.
2. Perform Component Access procedure.
3. Verify that incoming gas line has been turned off.
4. Disconnect incoming gas line from Gas Shutoff Valve.
5. Remove shaft from front of Gas Shutoff Valve.
6. Label and disconnect wires from Gas Valve.
7. Disconnect gas lines to pilot and burners.
8. Remove screws attaching Gas Valve to compartment.
9. Remove Gas Valve with Shutoff Valve attached.

NOTE: If only Gas Valve is to be replaced, remove Shutoff Valve from Gas Valve.

10. Reverse procedure to install a Gas Valve.

NOTE: Use Anti-Seize Technologies TFE1400 all pipe threads when installing or replacing a Gas Valve.

CAUTION: When reconnecting any gas connection use pipe joint compound.



WARNING

ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

11. Connect oven to power source.
12. Turn main gas line on.
13. Turn oven on and check for proper operation.

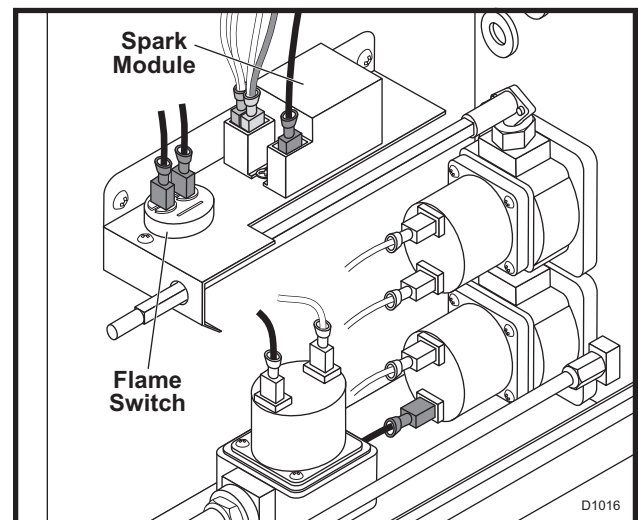
FLAME SWITCH

The Flame Switch is located on a bracket behind the Control Panel in front of the Spark Module.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.



1. Perform Component Access procedure.
2. Label and disconnect wires from Flame Switch.

3. Remove screws securing Flame Switch to compartment bracket and remove Flame Switch.
4. Remove flame switch thermocouple from spark electrode assembly.
5. Reverse procedure to install a new Flame Switch.

SPARK MODULE

The Spark Module is located on a bracket behind the Control Panel behind the Flame Switch.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Perform Component Access procedure.
2. Label and disconnect wires from Spark Module.
3. Remove screws securing Spark Module to compartment bracket and remove Spark Module.
4. Verify proper grounding of Spark Module.
5. Reverse procedure to install a new Spark Module.
6. Check oven operation.

BURNER ASSEMBLY AND ELECTRODE

The Burner Assembly is located under the center of the cooking cavity and can be accessed by removing the Lower Finish Piece. The Electrode is attached to a bracket on the Burner Assembly.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

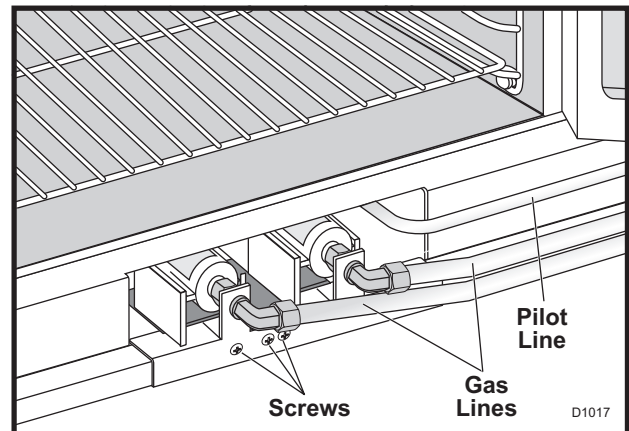


WARNING

SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

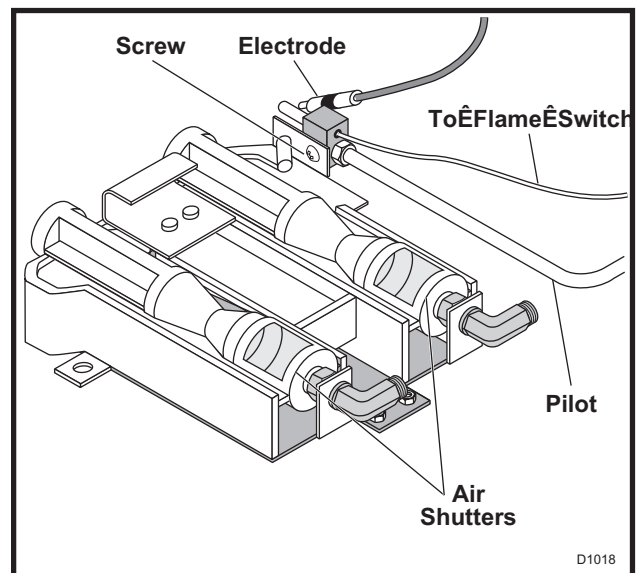
1. Perform Component Access procedure.

2. Remove the three screws securing the Burner Assembly to the bottom of the cooking cavity.
3. Disconnect two Burner Assembly gas lines at the Burner Assembly.
4. Disconnect pilot gas line.
5. Remove flame switch thermocouple from electrode.



6. Slide Burner Assembly with attached Electrode out from under the cooking cavity.
7. Remove screw securing Electrode to Burner Assembly and remove Electrode.
8. Reverse procedure to install a new Burner Assembly and Electrode.

NOTE: Use Anti-Seize Technologies TFE1400 on all pipe and fitting threads when reassembling the Burner Assembly.



CAUTION: When reconnecting any gas connection use pipe joint compound.



WARNING

**ALL GAS JOINTS DISTURBED DURING
SERVICING MUST BE CHECKED FOR
LEAKS. CHECK WITH A SOAP AND
WATER SOLUTION (BUBBLES). DO NOT
USE AN OPEN FLAME.**

9. Connect oven to power source.
10. Turn main gas line on.
11. Turn oven on and check for proper operation.

SERVICE PROCEDURES



WARNING

CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER AND FOLLOW LOCKOUT / TAGOUT PROCEDURES, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.



WARNING

ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

MAINTENANCE INSTRUCTIONS

These service procedures are for the use of qualified service personnel only. Service by other than qualified personnel may result in damage to the oven and/or injury to the operator.

Qualified service personnel are those individuals, firms, companies or corporations which either in person or through an agent are engaged in and responsible for repair or servicing of commercial food preparation equipment, who are experienced in such work, familiar with all precautions required, and have complied with all requirements of state and local authorities having jurisdiction.

If you should require assistance in the selection of a qualified service agency, please contact Duke Manufacturing Co.'s Service Department at 800-735-3853 ext. 5.

DOOR ADJUSTMENT

6/13 Series Turnbuckle Adjustment

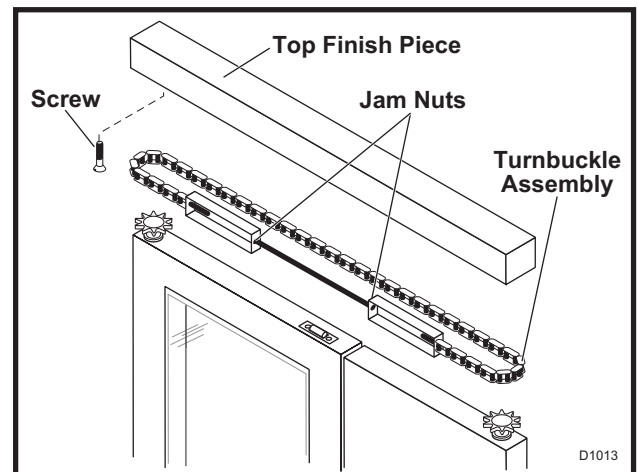
CAUTION: The door Turnbuckles and door



Switch are located in a heated zone. Care should be taken to avoid burns.

All 6/13 Series Convection Ovens (except model option Q) have doors that are interconnected so they operate simultaneously by means of a Drive Chain and Turnbuckle Assembly. The doors are properly adjusted and inspected before the oven leaves the factory. However, from time to time it may become necessary to readjust the doors for proper operation, the Drive Chain and Turnbuckle Assembly is located behind the Top Finish Piece above the doors. It is best to adjust Turnbuckles while the door is in an unlatched position.

1. Open Oven Doors.
2. Remove the Top Finish Piece above the Oven Door by removing the screws securing the Top Finish Piece.



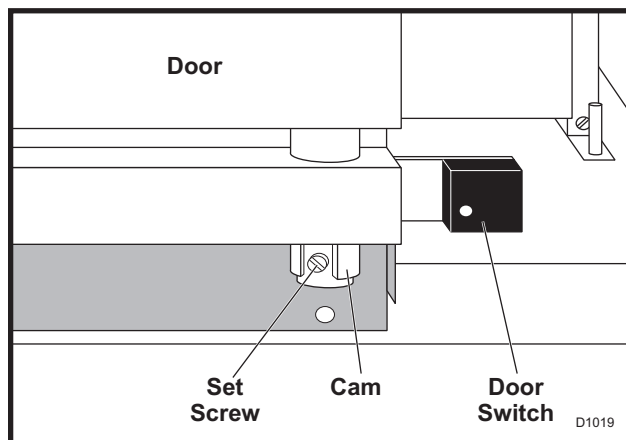
3. Loosen the jam nuts on both Turnbuckles.
4. Make adjustments simultaneously to both Turnbuckles. Loosen one Turnbuckle and tighten the other.

5. Once the Oven Doors are operating properly, retighten the jam nuts so the Oven Doors will stay in adjustment. Test the Oven Doors to make certain the adjustment is correct.
6. Install top finish piece over the door.

Door Switch Adjustment

The door Switch is located behind the lower cover, on the right side. The door Switch is activated by a Cam, which is mounted to the door's hinge pin with a set screw.

1. Open the Oven Doors fully.
2. Remove the Lower Finish Piece by loosening the four screws located inside door opening.
3. Position the Oven Doors so they are nearly closed but not latched.
4. To adjust the Cam loosen the set screw and rotate the Cam until you hear the Switch click.
5. Tighten the set screw in the Cam. Test the Oven Door to make certain the Switch will make contact with the doors closed.
6. Replace the Lower Finish Piece.



DOOR SWITCH CHECK



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Open the Oven Doors fully.
2. Remove the Lower Finish Piece by loosening the four screws located inside the Oven Door opening.
3. Disconnect wire from the door Switch and connect an ohmmeter across door switch contacts.
4. Check that with Oven Door open there is no continuity.
5. Close door until a click is heard and check Switch contacts for continuity. Ohmmeter should indicate 0 Ohms.

THERMOSTAT CALIBRATION

NOTE: Thermostat calibration is applicable only for the V Controller. It is not applicable to ovens with solid-state controls.

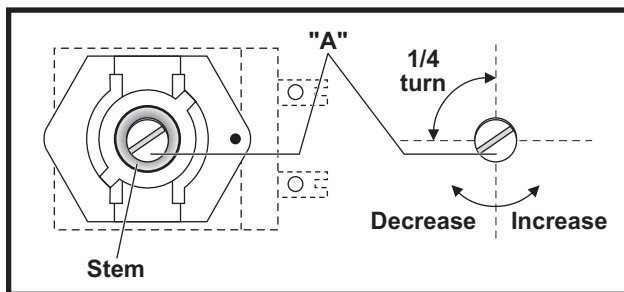
Check Calibration

1. Turn the oven on by turning the POWER Switch to the COOK position.
2. Open the Oven Doors and place a pyrometer in the center of the middle oven rack. A reliable mercury-type thermometer can be substituted if a pyrometer is not available.
3. Turn the Thermostat dial to 350°F (177°C). Allow the oven to preheat 1/2 hour. When the indicator light goes out, the Thermostat has been satisfied. Check the pyrometer or thermometer to determine the internal oven temperature. If the reading on the pyrometer (or thermometer) is less than 10°F different from the Thermostat setting, no adjustment is needed. If this reading is more than 10°F different, proceed with calibration procedure.

To Calibrate the Thermostat

1. Remove the Thermostat Knob by loosening the set screw and pull the Knob forward. Take care not to rotate the Thermostat stem, which will change the setting.
2. With a very small screwdriver, turn the screw "A" located in the bottom of the hollow of the stem clockwise to lower the temperature or counterclockwise to raise the temperature. DO NOT allow the stem of the Thermostat to rotate as you turn the screw.

CAUTION: Maximum turn of screw "A" is 1-1/2 turns – clockwise or counterclockwise.



3. Open the door and turn the POWER Switch to the COOL DOWN position. This will allow the Fan to come on without the Burners and cool off the oven. Allow the oven to cool to about 250°F (120°C).
4. Return the POWER Switch to the COOK position and repeat the previous steps until the Thermostat setting and the pyrometer (thermometer) reading agree.
5. Replace the Knob and tighten the set screws.

This Thermostat is a direct-acting (opens on temperature rise) device.

OVEN THERMOSTAT PILOT PIN KIT

These instructions apply only to ovens with "V" style controllers. These are units with the electro-mechanical controller assembly.

Reason for Kit

The Thermostat shaft is hollow allowing access to adjust the thermostat. Because the shaft is hollow the knob loosens. This kit adds a pilot pin to the hollow section of the shaft preventing it from collapsing.



WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES GAS CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO GAS, ALWAYS FOLLOW THE GAS LOCKOUT/TAGOUT PROCEDURE. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.



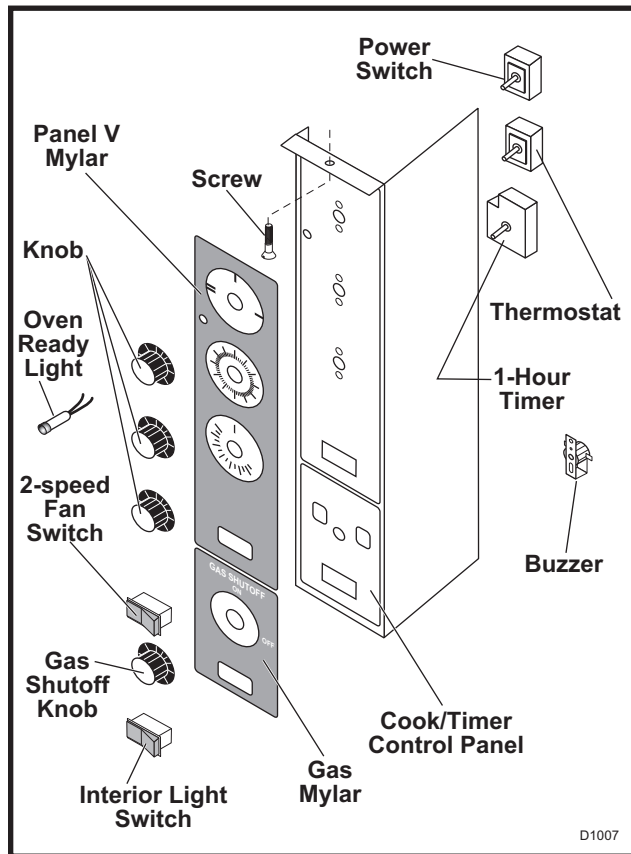
WARNING

BEFORE PERFORMING ANY SERVICE THAT INVOLVES ELECTRICAL CONNECTION OR DISCONNECTION AND/OR EXPOSURE TO ELECTRICAL COMPONENTS, ALWAYS FOLLOW THE ELECTRICAL LOCKOUT/TAGOUT PROCEDURE. DISCONNECT ALL CIRCUITS. FAILURE TO COMPLY CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH.

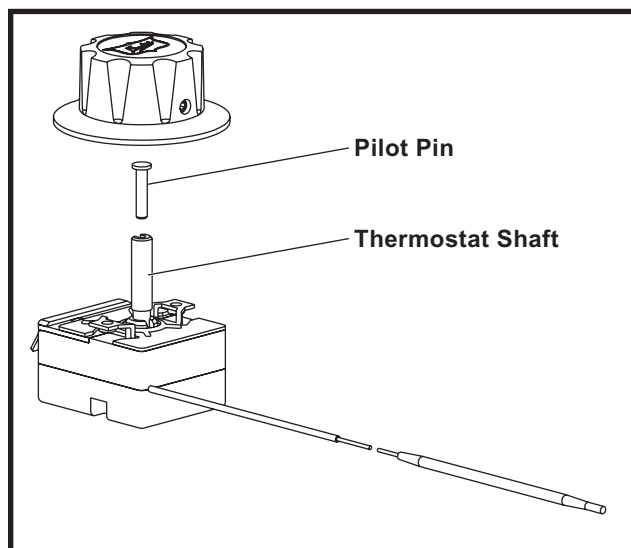
Kit Installation

1. Ensure the Thermostat is calibrated properly. To calibrate Thermostat refer to the THERMOSTAT CALIBRATION section of this manual.
2. Place the oven's Power ON/OFF switch in the OFF position.

3. Place the Gas Shut Off Valve in the OFF position.
4. Remove the Thermostat Knob



5. Insert Pilot Pin into the hollow of the Thermostat Shaft. The wide end of the pin should be flush against the end of the Thermostat Shaft.



NOTE: It is not necessary to remove the Thermostat to perform this procedure.

6. Reattach the Thermostat Knob.
7. Move the Gas Valve to its ON position.
8. Move the Oven ON/OFF switch to its on position.
9. Ensure the oven is operating correctly and the Thermostat is calibrated accurately. The oven should be preheated for a minimum of 30 minutes before taking temperature readings.

MOTOR CIRCUIT CHECK

The Motor should be operating the Fan at any time the oven is turned on and the Fan Switch is in the ON position. The Fan should be turning clockwise.



WARNING

DISCONNECT OVEN FROM POWER SOURCE BEFORE PERFORMING ANY SERVICE.

1. Turn Power Switch to OFF position and Fan Switch to OFF position.
2. Remove cover over Motor Junction Box.
3. Locate yellow/black wire connection and brown wire connection.
4. Connect voltmeter to these terminals.



WARNING

CIRCUIT IS ENERGIZED AFTER NEXT STEP.

5. Turn POWER Switch to COOK position.
6. Set Fan Switch to ON position.
7. Check voltmeter reading. Reading should be the same as input power source.
8. If no voltage is measured, check voltage at POWER Switch and at Fan Switch.

9. If voltage is present and Motor is not operating, replace Motor.
10. If Motor operates check direction of rotation.
11. Turn POWER Switch to OFF position.
12. Install cover over Motor Junction Box.
13. Check operation of oven.

GAS PRESSURE INTERNAL REGULATOR AND ADJUSTMENT

The gas pressure has been preset at the factory for the type of gas specified on the rating plate; however, it is sometimes necessary to adjust the gas pressure after the unit has been installed.

1. Turn the Gas Shutoff Valve to the OFF position.
2. Perform Component Access procedure as outline under COMPONENT REMOVAL AND REPLACEMENT.
3. Pull the Control Panel forward and lay aside. Do not remove any wiring.
4. Remove the Lower Finish Piece (Combustion Compartment Cover) by removing the screws located in the bottom of the door opening.
5. Find the pressure tap located at the lower right hand corner of the oven on the right hand side of a plumbing "Tee". The pressure tap is a 1/8" pipe plug with a hex head.
6. Remove the pressure tap plug and replace with the fitting for a gas pressure meter, slack tube or manometer.
7. Attach the meter.
8. The pressure regulator is an integral part of the dual solenoid gas valve. Locate the adjustment screw on the left hand side. (It has a slotted aluminum cover cap.)
9. Remove the cover cap.
10. Open the Gas Shutoff Valve.
11. Turn the POWER Switch to the COOK position.
12. With the burners on, check your meter. The manifold pressure should be 3.5" W.C. for natural gas and 10" W.C. for propane.
13. Check the rating plate to verify gas types and pressures.

NOTE: It is important to check the gas pressure of any unit while ALL the equipment on that gas line is ON. This will tell you if you have a properly sized gas delivery system or if there is a problem with gas volume. If you experience a pressure drop that does not recover when the other equipment is turned on, you should look for problems in the size of the pipes or *some* other type of restriction. Refer to the chart on Maximum Capacity of Pipes located in the Installation and Operation manual.

14. Rotate pressure regulator adjustment screw, clockwise to increase pressure, counter-clockwise to decrease pressure.
15. When the proper pressure is attained, turn the POWER Switch to the OFF position and close Manual Shutoff Valve.
16. Remove meter and fitting. Reinstall pressure tap plug. (You may need to add some pipe dope to the plug to prevent a leak.)
17. Turn the POWER Switch to the COOK position and open the Manual Shutoff Valve.
18. With a solution of soapy water, check for gas leaks. Repair any leaks.
19. Replace cover cap on Gas Valve.
20. Replace Combustion Compartment Cover (Lower Finish Piece).
21. Rotate Control Panel up and secure with screw.

CHECKING AND ADJUSTING ELECTRODE GAP

The gap between the Electrode and the pilot hood is factory set and should normally not need to be adjusted. If the pilot fails to ignite, this gap should be checked.

1. Remove the Burner and Electrode assembly as described in BURNER ASSEMBLY AND ELECTRODE Removal Procedure.
2. The gap between the Electrode and the pilot hood should be set at $7/64 \pm 1/64$ inch. If gap is not correct, adjust to proper setting.
3. Reinstall Burner and Electrode assembly.
4. Check oven for proper ignition.

VENTILATION SYSTEM

It is important that the ventilation system be inspected and/or maintained by Qualified Personnel at least once each year.

This inspection/maintenance should consist of, but not be limited to:

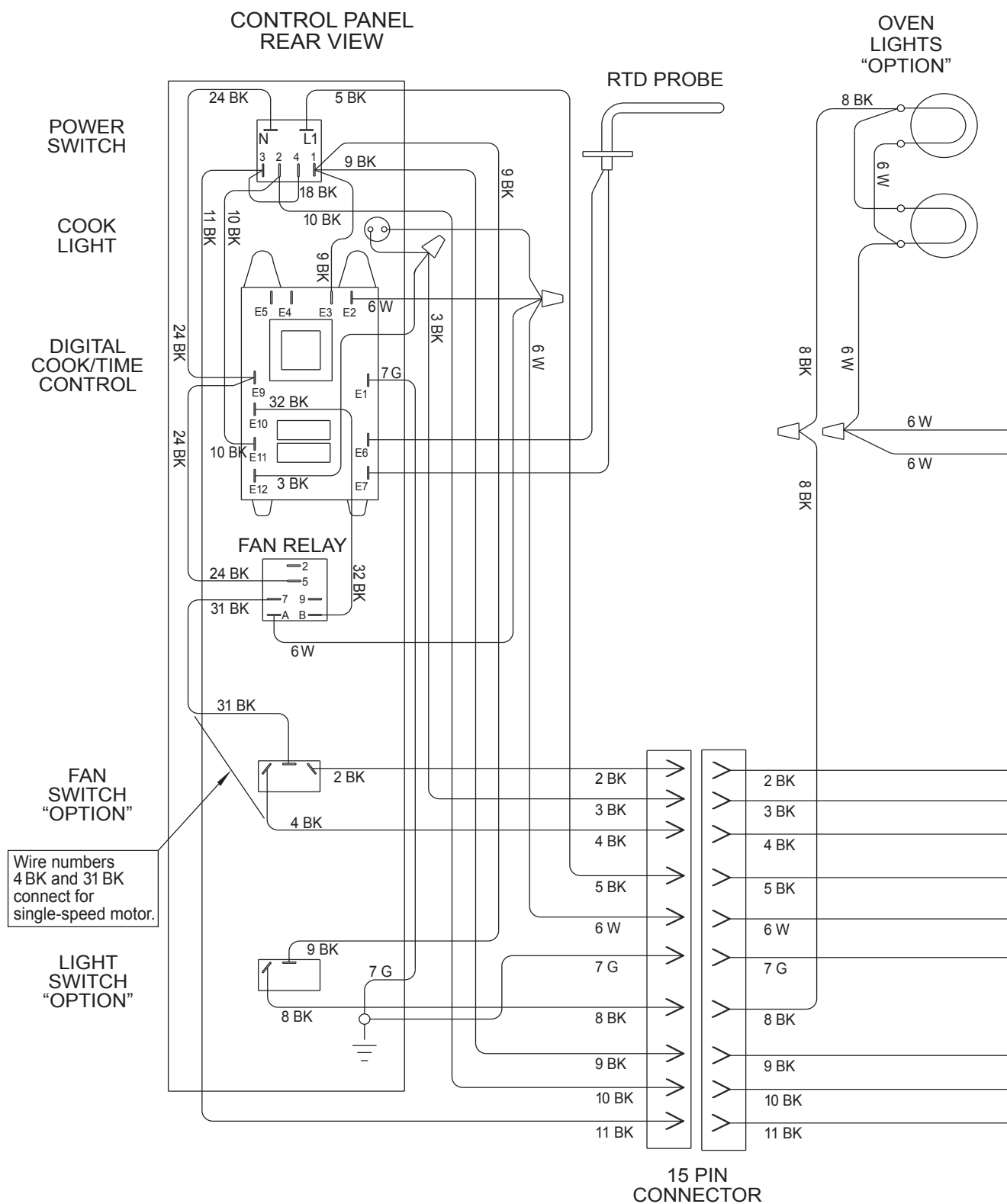
- Inspection for blockages or buildup which might interfere with the venting of the oven.
- Repair of such blockages.
- Proper installation of the draft hood or the flue guard.
- Inspection of the venting canopy, its drive motors and belts, etc.

TROUBLESHOOTING

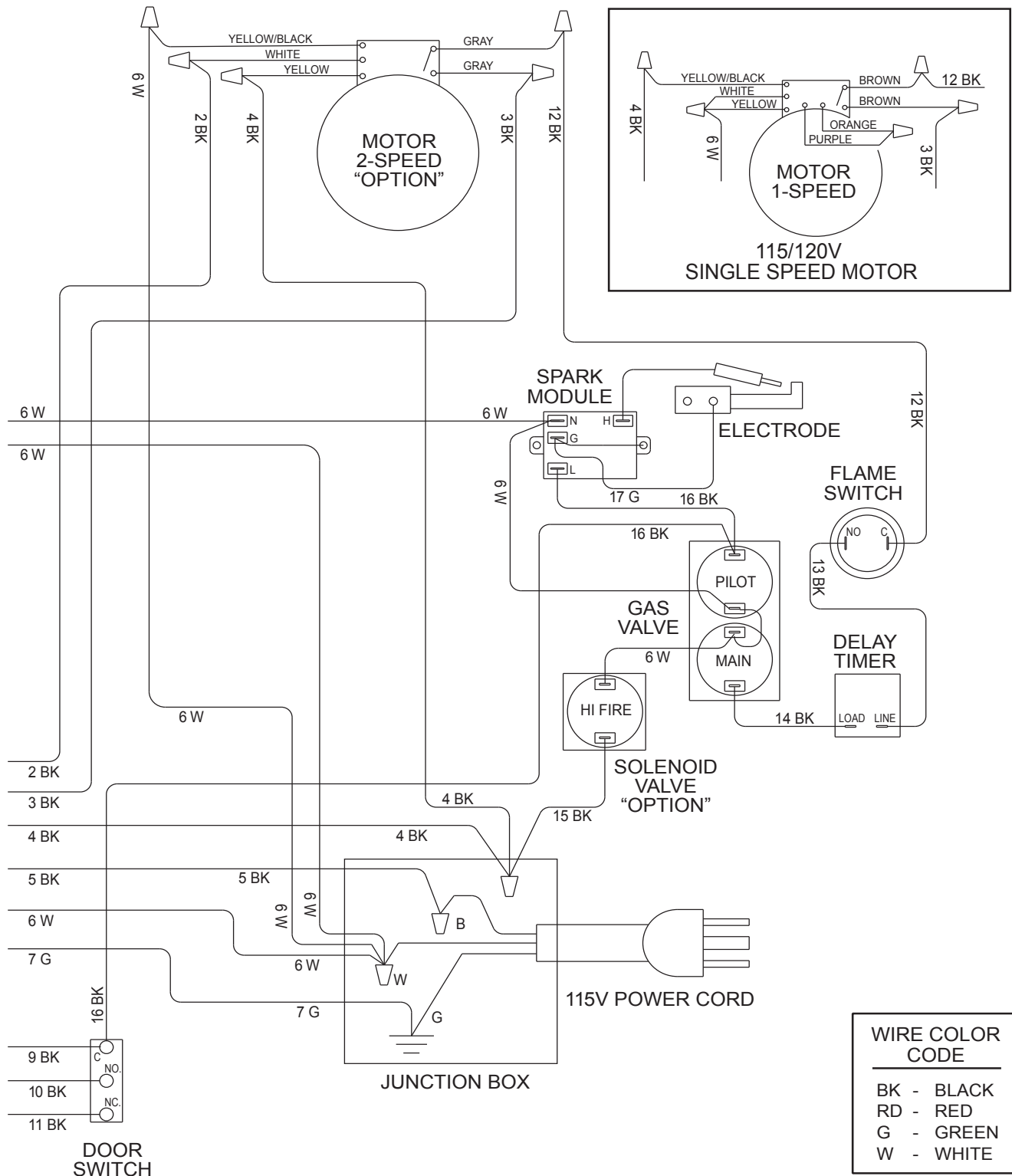
SYMPTOM	CAUSE	REMEDY
Oven not heating, Fan not operating and Lights not operating.	Oven not plugged into an operating power source.	Plug oven into a power source with the proper rating.
	Blown Fuse	Replace Fuse.
	POWER Switch not in the COOK position	Rotate POWER Switch to the COOK position.
POWER Switch is in the COOK position but Oven not heating, Fan not operating.	On ovens using the V controller:	
	Thermostat in OFF position	Rotate Thermostat to select desired temperature.
	Timer in OFF position	Rotate Timer to desired time interval.
	On ovens using the X, Z, or ZX Controller:	
	Faulty Digital Cook/Time Control	Replace Digital Cook/Time Control.
	Faulty Door Switch or Oven Door not completely closed	Check operation of Door Switch. Adjust or replace as necessary.
Fan operating but Oven not heating.	POWER Switch in COOL DOWN position	Rotate POWER Switch to COOK position.
	Gas SHUTOFF Valve in OFF position	Open Gas SHUTOFF Valve.
	Spark Module not igniting pilot.	Check and replace Spark Module.
	Faulty Gas Valve	Replace Gas Valve.
	Faulty Flame Switch	Replace Flame Switch.
	Faulty Delay Timer	Replace Delay Timer.
Oven does not heat to selected temperature level.	Low incoming gas pressure	Check incoming gas pressure and adjust as necessary.
	Faulty RTD Probe on ovens using the X, Z or ZX Controllers	Replace RTD Probe.
	Faulty Thermostat on ovens using the V Controller	Replace Thermostat.
FAN Switch does not change blower speed.	Defective Fan Switch	Replace Fan Switch.
	Defective Motor	Replace Motor.
Oven temperature continues to rise above selected temperature.	Defective Thermostat or Digital Cook/Time Control	Replace Thermostat or Digital Cook/Time Control as applicable.
Light(s) do not operate.	Blown light bulb(s)	Replace defective Light Bulb.
	Defective light socket	Replace light socket.
	Defective LIGHTS Switch	Replace LIGHTS Switch.

WIRING DIAGRAMS

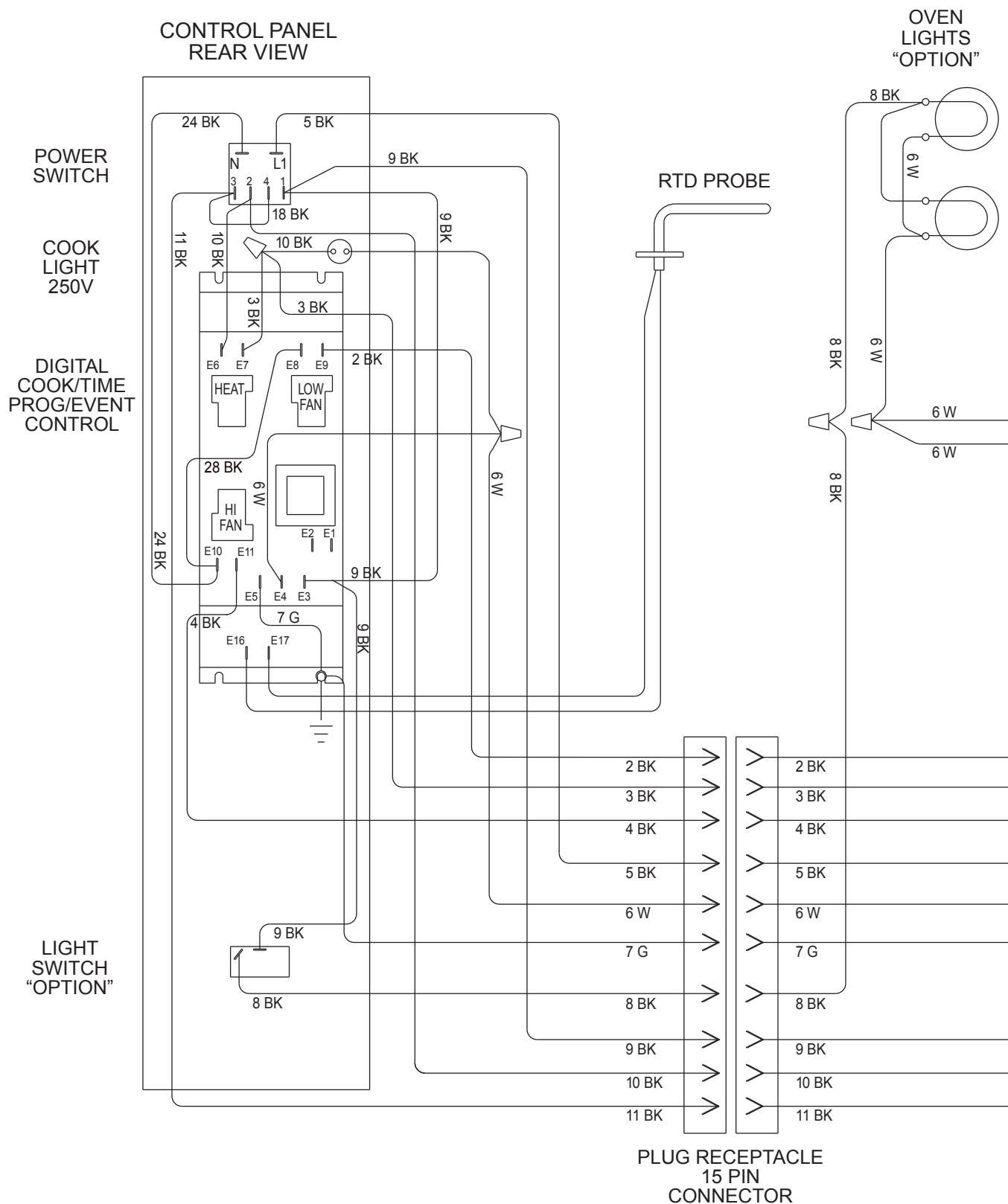
6/13 X CONTROLLER



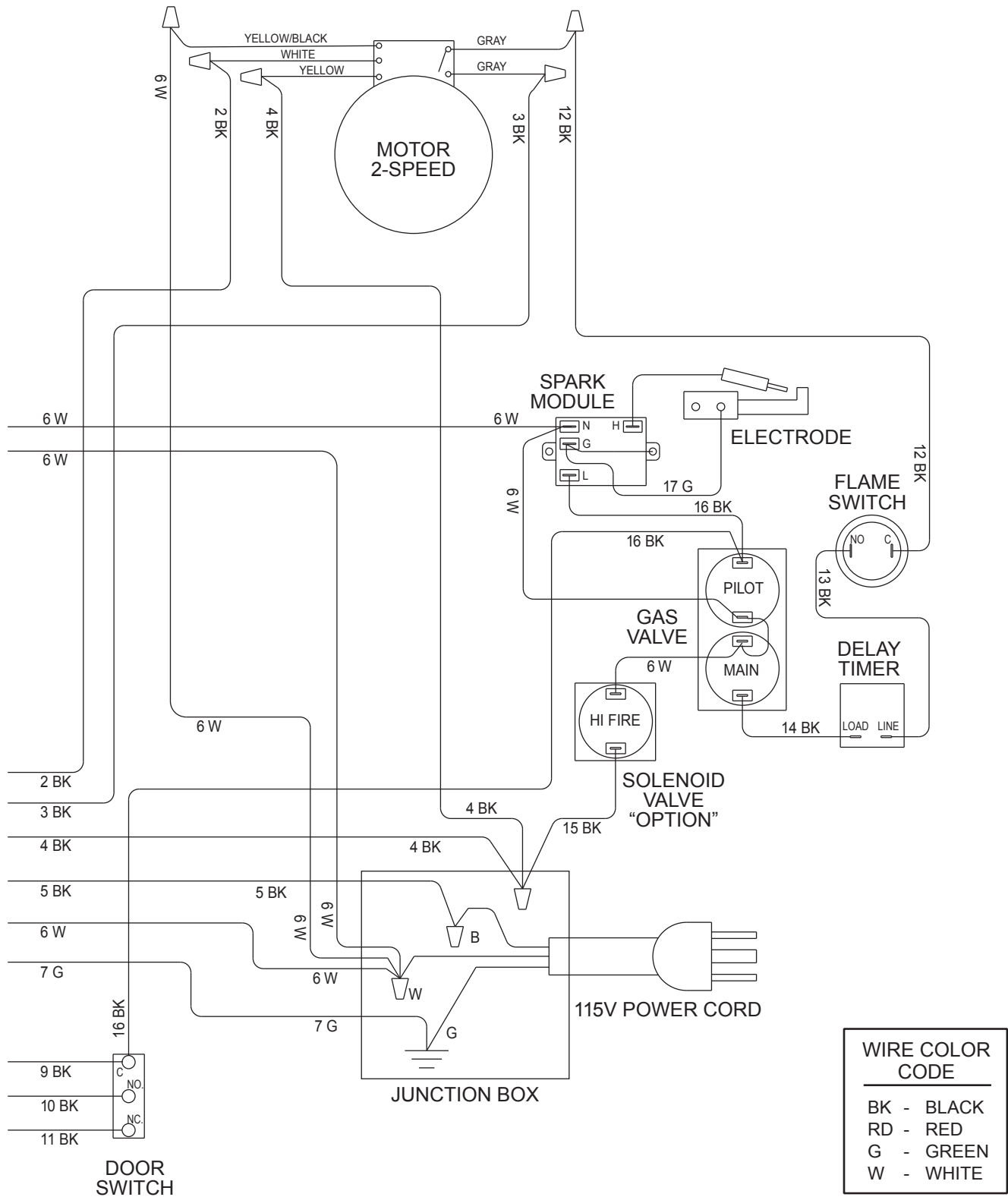
6/13 X CONTROLLER (CONT'D.)

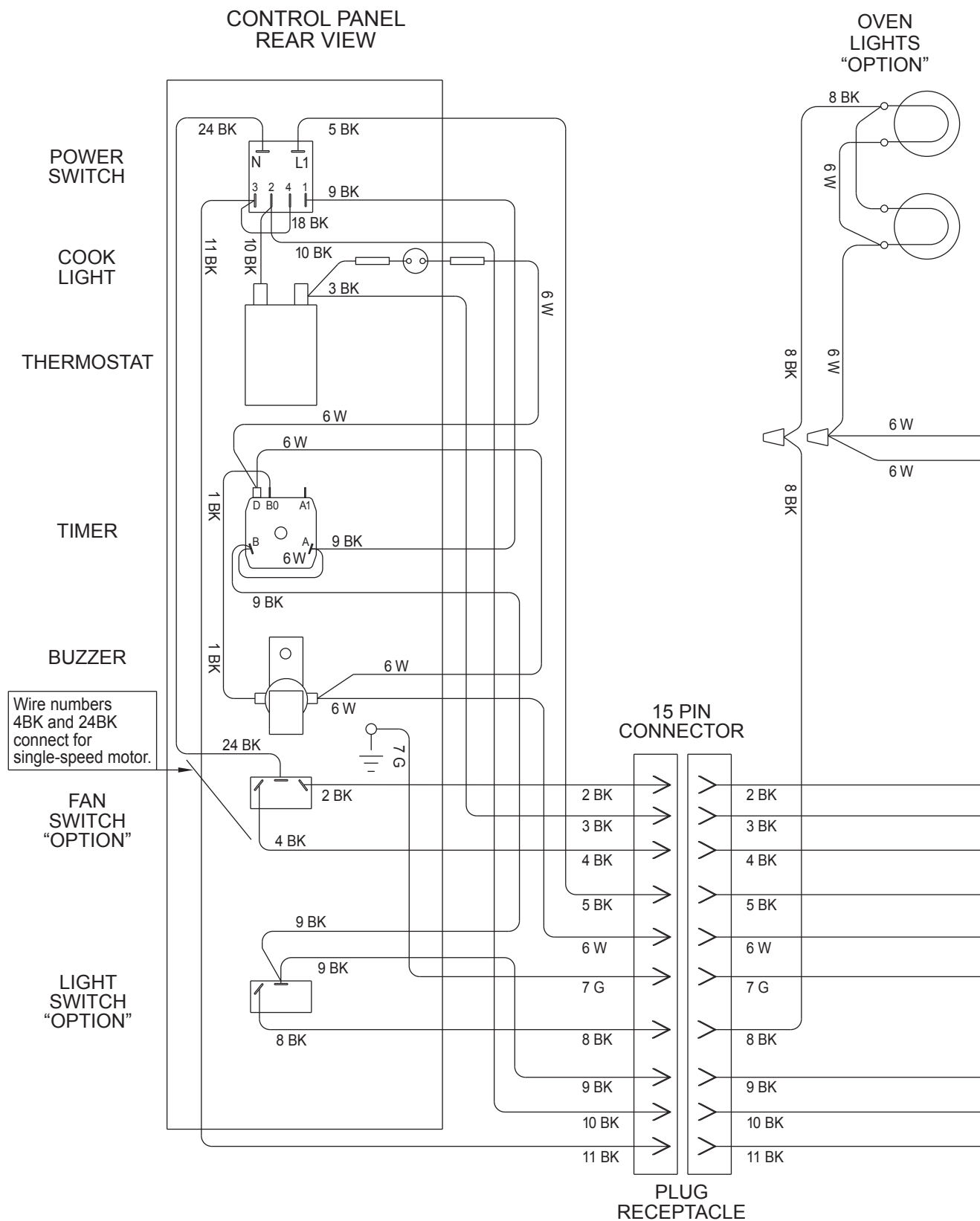


6/13 Z AND ZX CONTROLLER

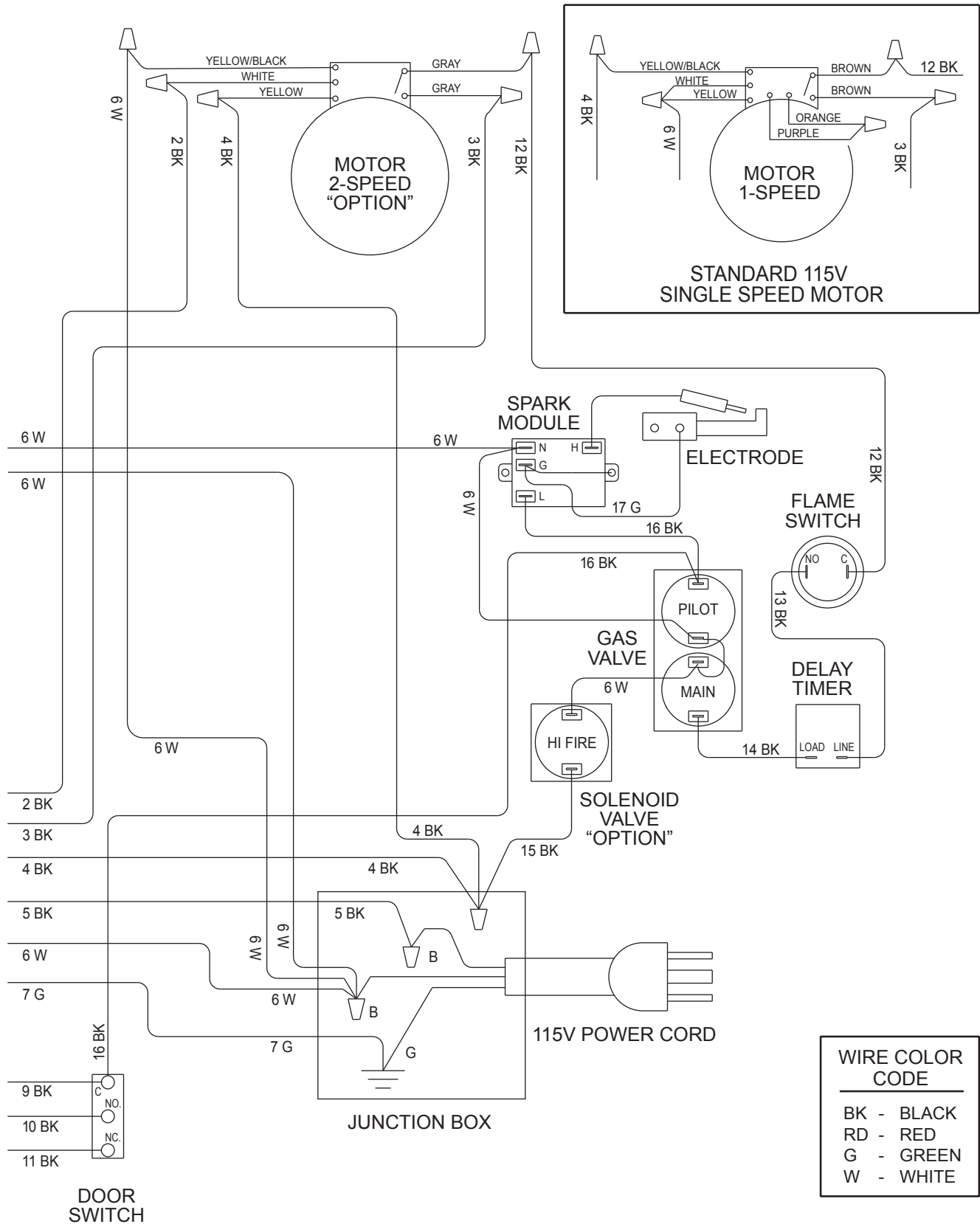


6/13 Z AND ZX CONTROLLER (CONT'D.)



E SERIES OVEN V CONTROLLER

E SERIES OVEN V CONTROLLER (CONT'D.)



P.N. 153619 Rev.C

POWER SWITCH

"V" Controller





"Your Solutions Partner"

Duke Manufacturing Co.

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